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| 09/752,781 | 01/03/2001 | Hiroshi Sumida | MI 003-US/OH | 1396 |

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EXAMINER

RUTHKOSKY, MARK

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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1745

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DATE MAILED: 12/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/752,781

Applicant(s)

SUMIDA ET AL.

Examiner

Mark Ruthkosky

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 1 and 5 stand rejected under 35 U.S.C. 102(b) as being anticipated by Capparella et al. (US 5,698,176.)

The instant claims are to manganese dioxide having a sodium content of 0.05 to 0.2% by weight.

Capparella et al. (US 5,698,176) teaches a manganese compound with a sodium content of 0.05% (as shown in example 1 and Table 1.) The starting material is electrolytic manganese dioxide that is neutralized with a base. Lithium primary cells are described in col. 1. Thus, the claims are anticipated.

3. Claims 7 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Capparella et al. (US 5,698,176.)

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Capparella et al. (US 5,698,176) teaches a manganese compound with a sodium content of 0.05% (as shown in example 1 and Table 1.) The starting material is electrolytic manganese dioxide that is neutralized with a base. Lithium primary cells are described in col. 1.

These claims are product-by-process claims. MPEP 2113 states, "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process."

Thus, the claims are anticipated.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2, 6, 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Capparella et al. (US 5,698,176) as applied above, and further in view of EP 373,791.

Capparella et al. (US 5,698,176) teaches a manganese compound with a sodium content of 0.05% (as shown in example 1 and Table 1.) The starting material is electrolytic manganese dioxide, which is neutralized with a base. Lithium primary cells are described in col. 1.

Capparella et al. (US 5,698,176) does not teach the manganese dioxide to have a phosphorous

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content of 0.05 to 2.0% by weight. EP 373,791 teaches a lithium primary cell having a phosphorous content of 0.05 to 2.0% by weight based on manganese dioxide (see claims 1-3.) It would be obvious to one of ordinary skill in the art at the time the invention was made to prepare a manganese dioxide material to have a phosphorous content of 0.05 to 2.0% as taught by EP 373,791 in order to achieve a high discharge voltage and long discharge time (see EP 373,791 page 2, lines 30-41.) The prior art teaches that discharge characteristics in a lithium primary cell are degraded if the phosphorous content is higher than 2.0%. Capparella et al. (US 5,698,176) teaches that it is desirable to have a manganese dioxide material with a lower sodium content in electrochemical cells as the storage life and load voltage are increased. One of ordinary skill would understand from the applied teachings to prepare manganese dioxide having a sodium content of 0.05 to 0.2% and a phosphorous content of 0.05 to 2.0% (by weight.) It is further noted that the processes of EP 373,791, examples 1-4 and 6-7, would not add sodium to the material.

Claims 8 and 10 are product-by-process claims. MPEP 2113 states, "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process."

6. Claim 4 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Nagayama et al. (US 6,383,683) in view of EP 373,791.

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The instant claims are to a process for producing manganese dioxide having a sodium content of 0.05 to 0.2% by weight. The process includes the steps of neutralizing electrolytic manganese dioxide with an aqueous solution of sodium hydroxide wherein the solution contains 2.0-5.0 g of NaOH per kg of manganese dioxide.

Nagayama et al. (US 6,383,683) teaches a process where 10 kilograms of electrolytic manganese dioxide are neutralized with an aqueous solution of 35 grams of sodium hydroxide in water. The weight ratio therefore contains 3.5 grams of NaOH per kg of manganese dioxide, which is in the range of 2.0-5.0 g of NaOH per kg of manganese dioxide. The resulting material contains sodium in an amount of 0.05 to 1.0 wt. % (see the claims.) Nagayama et al. (US 6,383,683) does not teach the manganese dioxide to have a phosphorous content of 0.05 to 2.0% by weight. EP 373,791 teaches a lithium primary cell having a phosphorous content of 0.05 to 2.0% by weight based on manganese dioxide (see claims 1-3.) It would be obvious to one of ordinary skill in the art at the time the invention was made to prepare a manganese dioxide material to have a phosphorous content of 0.05 to 2.0% as taught by EP 373,791 in order to achieve a high discharge voltage and long discharge time (see EP 373,791 page 2, lines 30-41.) The prior art teaches that discharge characteristics in a lithium primary cell are degraded if the phosphorous content is higher than 2.0%.

7. Claim 3 is rejected under 35 U.S.C. 103 as being obvious over Nagayama et al. (US 6,383,683) in view of Capparella et al. (US 5,698,176.)

The instant claims are to a process for producing manganese dioxide having a sodium content of 0.05 to 0.2% by weight. The process includes the steps of neutralizing electrolytic

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manganese dioxide with an aqueous solution of sodium hydroxide wherein the solution contains 2.0-5.0 g of NaOH per kg of manganese dioxide.

Nagayama et al. (US 6,383,683) teaches a process where 10 kilograms of electrolytic manganese dioxide are neutralized with an aqueous solution of 35 grams of sodium hydroxide in water. The weight ratio therefore contains 3.5 grams of NaOH per kg of manganese dioxide, which is in the range of 2.0-5.0 g of NaOH per kg of manganese dioxide. The resulting material contains sodium in an amount of 0.05 to 1.0 wt. % (see the claims.) The reference teaches the process to have further steps in order to form a lithium manganate structure having a sodium content of 0.05 to 1.0% by weight. Capparella et al. (US 5,698,176) teaches that it is desirable to have a manganese dioxide material with a low sodium content in electrochemical cells as the storage life and load voltage are increased (see col. 1, lines 54-end.)

It would be obvious to one of ordinary skill in the art at the time the invention was made to prepare a manganese dioxide material having a sodium content of 0.05 to 2.0% by the method of Nagayama et al. (US 6,383,683) as one of ordinary skill in the art would understand that the intermediate manganese dioxide prepared by the method steps of Nagayama et al. (US 6,383,683) will have a sodium content of 0.05% to 0.2% by weight. One of ordinary skill would recognize that the process gives a neutralized EMD, which has a sodium content of 0.05% to 0.2% by weight. Capparella et al. (US 5,698,176) teaches that it is desirable to have a manganese dioxide material with a low sodium content and one of ordinary skill would recognize that the process of Nagayama et al. (US 6,383,683) will give the results desired in the art as taught by Capparella et al. (US 5,698,176.)

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Response to Arguments

8. Applicant's arguments filed 9/6/2002 have been fully considered but they are not persuasive.

With regard to claims 1 and 5 rejected under 35 U.S.C. 102(b) as being anticipated by Capparella et al. (US 5,698,176), the claims are to manganese dioxide having a sodium content of 0.05 to 0.2% by weight. The process of making the material and the "for use" language does not limit the product which is manganese dioxide having a sodium content of 0.05 to 0.2% by weight. For clarity, the examiner's interpretation of soda is any compound containing sodium. The reference teaches sodium hydroxide neutralized EMD. The EMD produced has a sodium content of 0.05 to 0.2% by weight as shown in table 1.

With regard to claims 2 and 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Capparella et al. (US 5,698,176) in view of Yamaguchi et al. (EP 373,791), the response to arguments of Capparella et al. (US 5,698,176) are noted in the previous paragraph. EP 373,791 teaches the desirability of having a lithium primary cell having a phosphorous content of 0.05 to 2.0%, and a method to prepare a manganese dioxide material to have a phosphorous content of 0.05 to 2.0%. The prior art teaches that discharge characteristics in a lithium primary cell are degraded if the phosphorous content is higher than 2.0%. Capparella et al. (US 5,698,176) teaches that it is desirable to have a manganese dioxide material with a lower sodium content in electrochemical cells as the storage life and load voltage are increased. One of ordinary skill would understand from the applied teachings to prepare manganese dioxide having a sodium content of 0.05 to 0.2% and a phosphorous content of 0.05 to 2.0% (by weight.) It is further

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noted that the processes of EP 373,791, examples 1-4 and 6-7, would not add sodium to the material.

With regard to claim 3, the change of claim language to "consists essentially of" has overcome the anticipation by Nagayama et al. (US 6,383,683.) A new rejection under 35 U.S.C. 103 as being obvious over Nagayama et al. (US 6,383,683) has been applied.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Examiner Correspondence

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1193. Any inquiry

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concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 703-305-0587. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:00.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 703-308-2383. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

A handwritten signature, likely of the examiner or supervisor, in black ink.